

FIG. 1

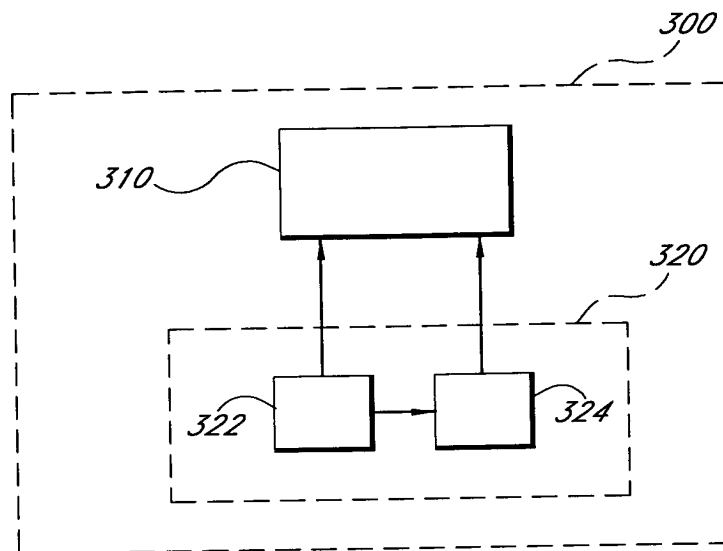


FIG. 2

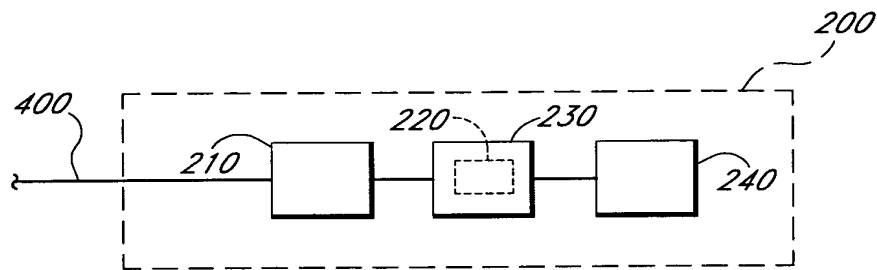


FIG. 3A

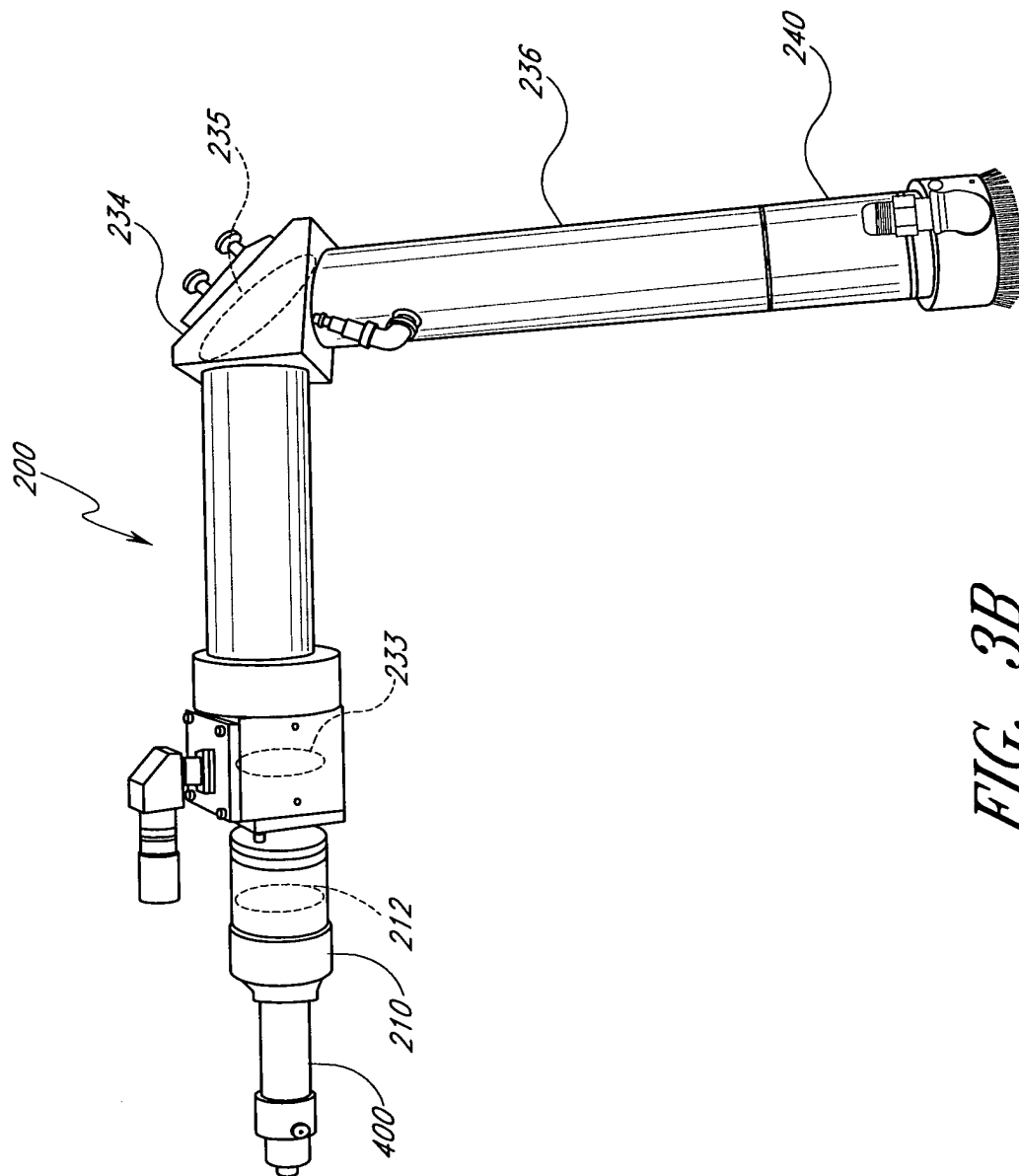


FIG. 3B

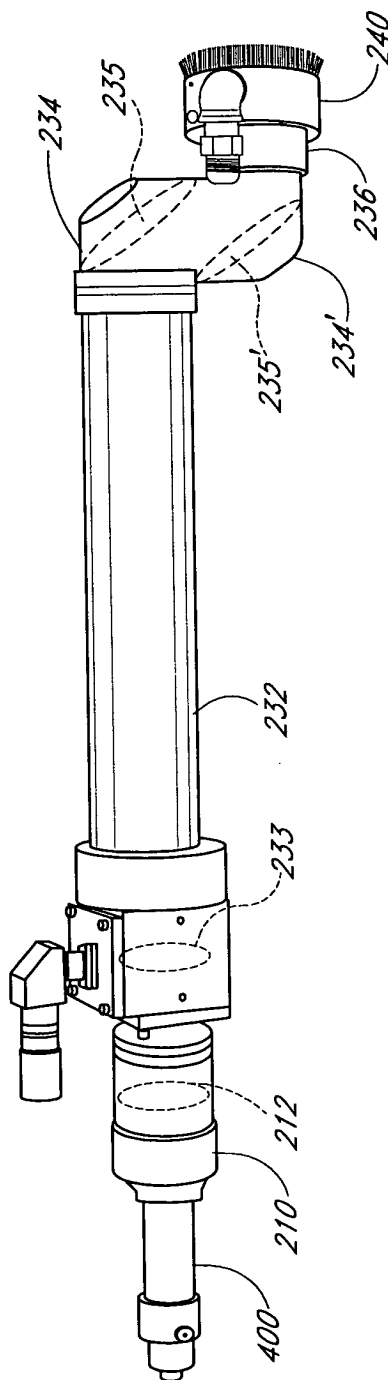


FIG. 3C

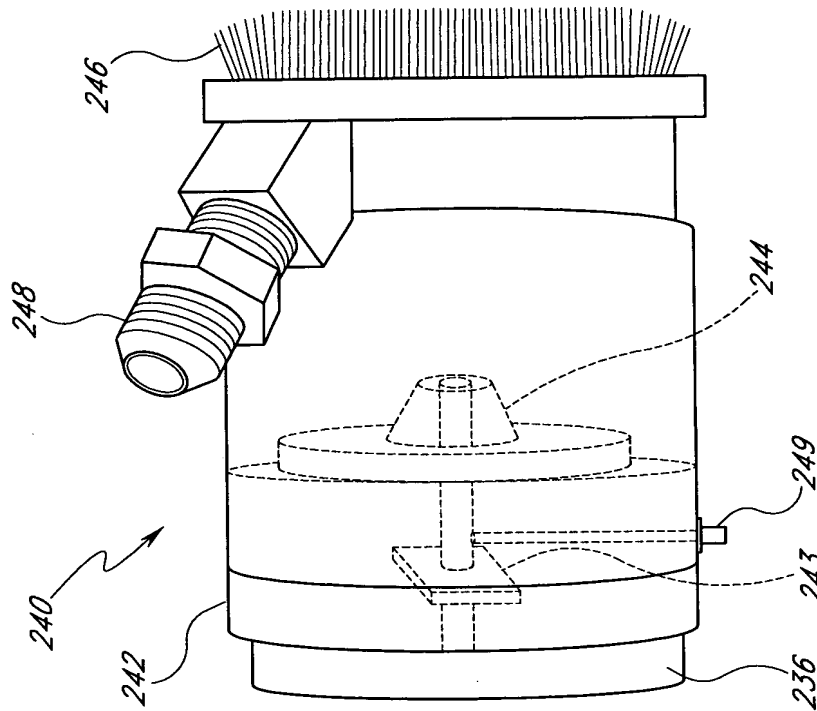


FIG. 4

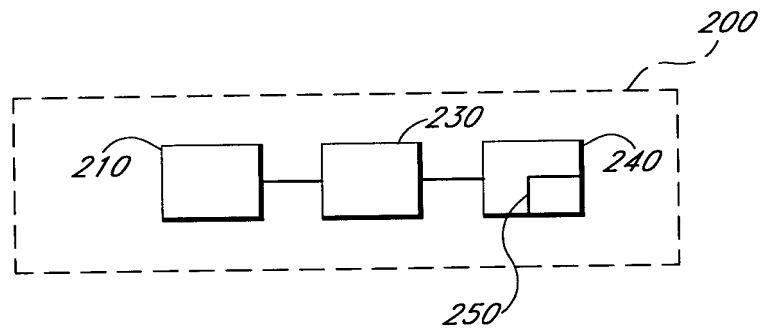


FIG. 5

LASER MANIPULATION SYSTEM FOR CONTROLLABLY MOVING A LASER HEAD FOR...

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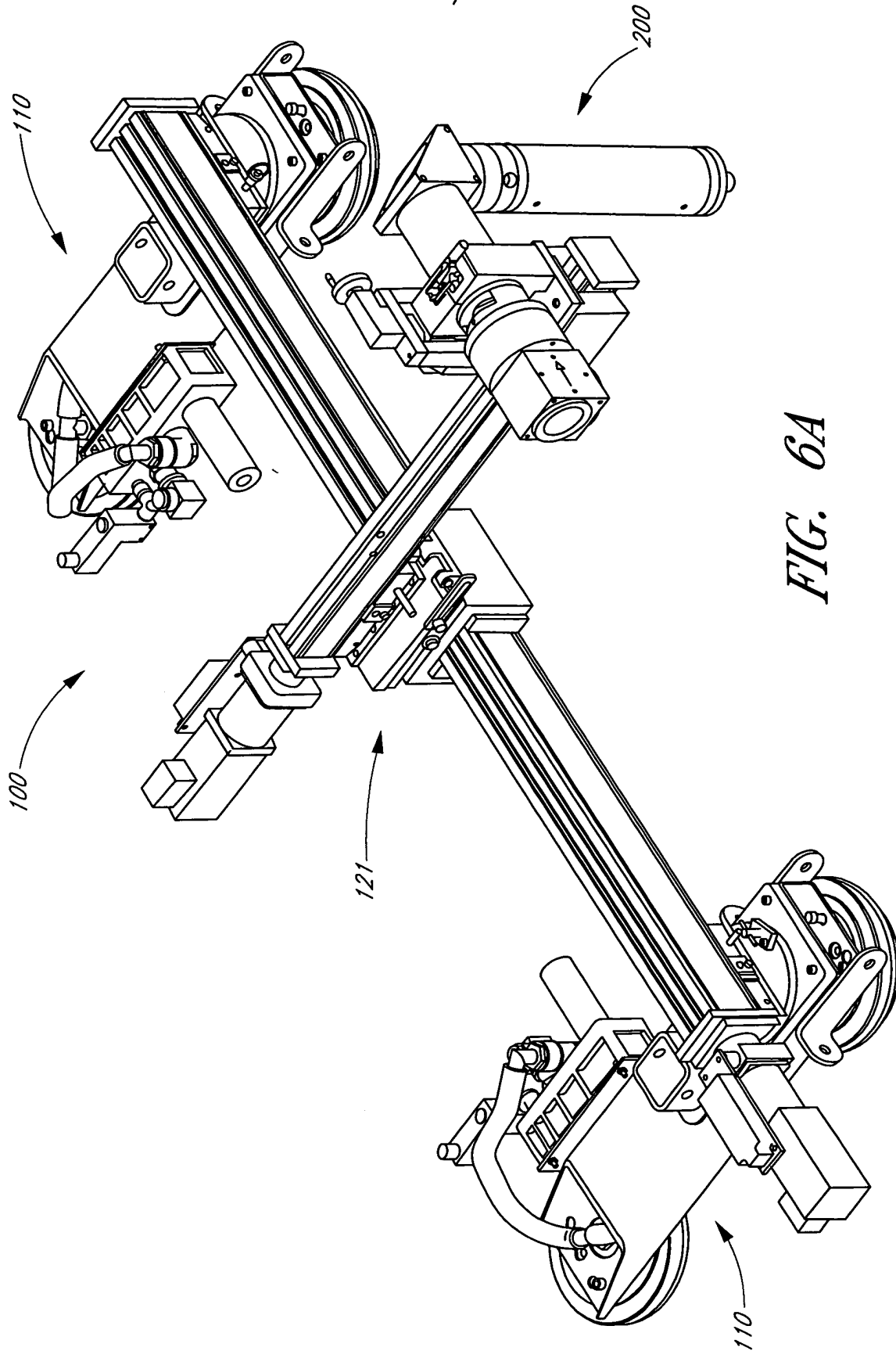
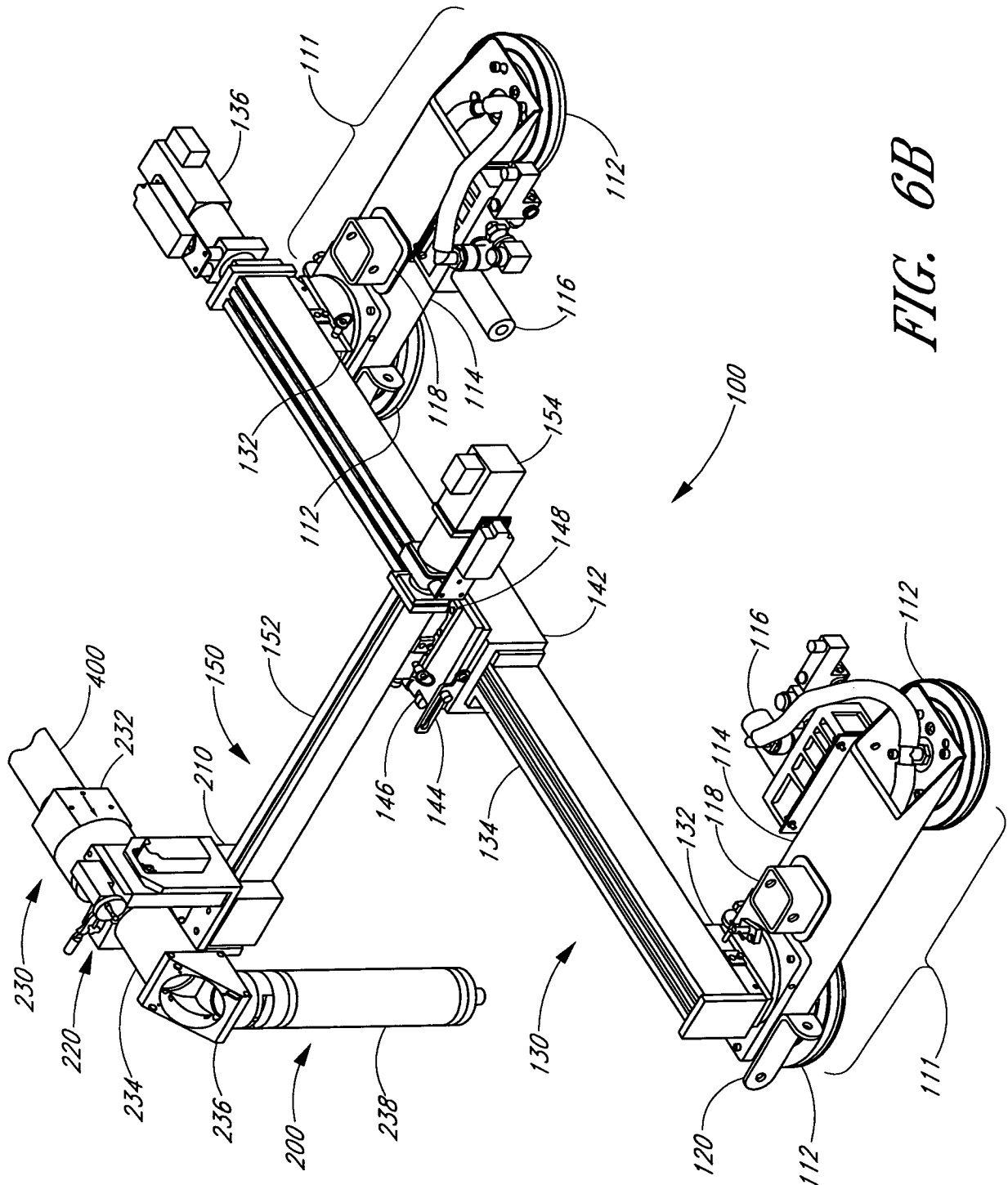
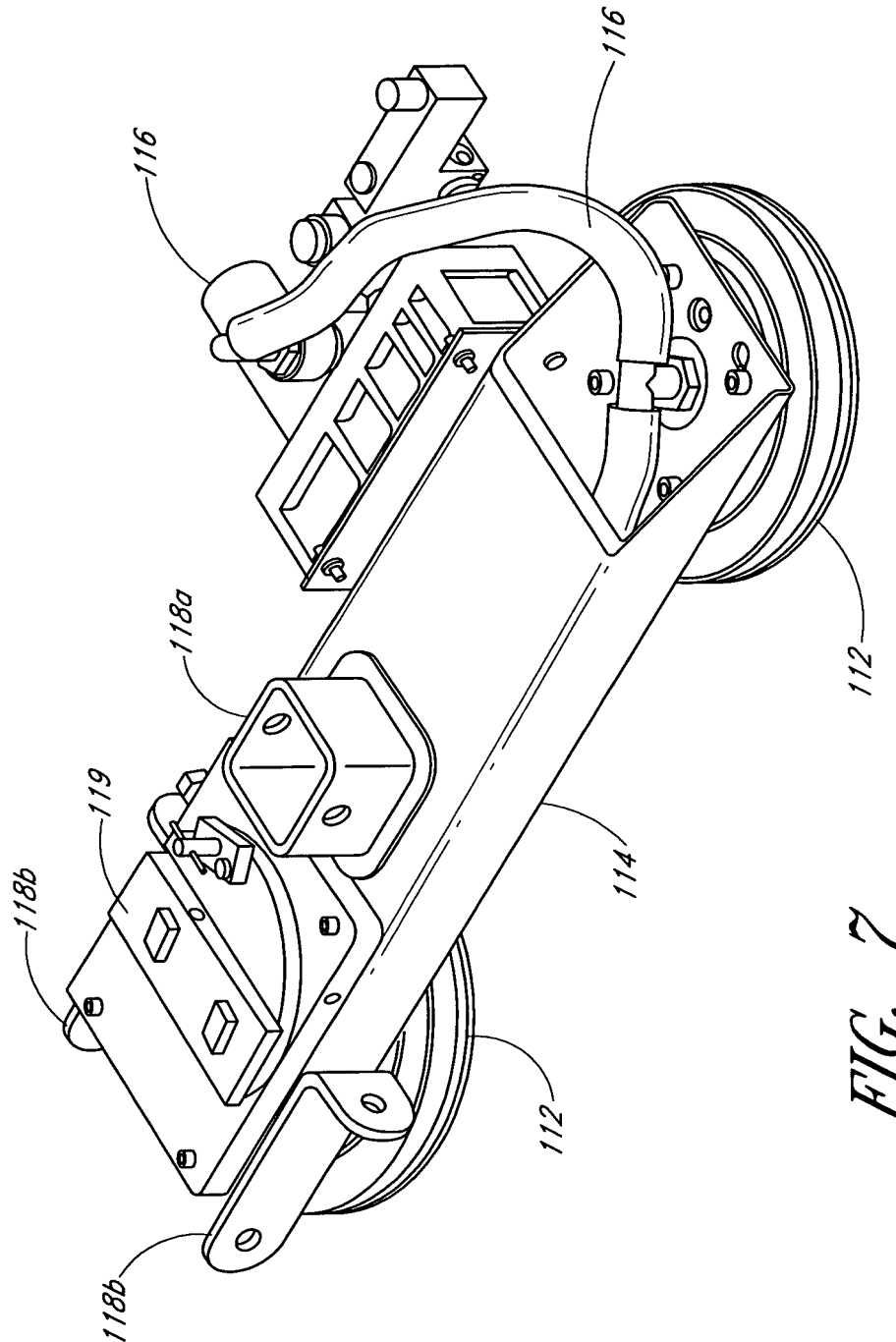


FIG. 6A

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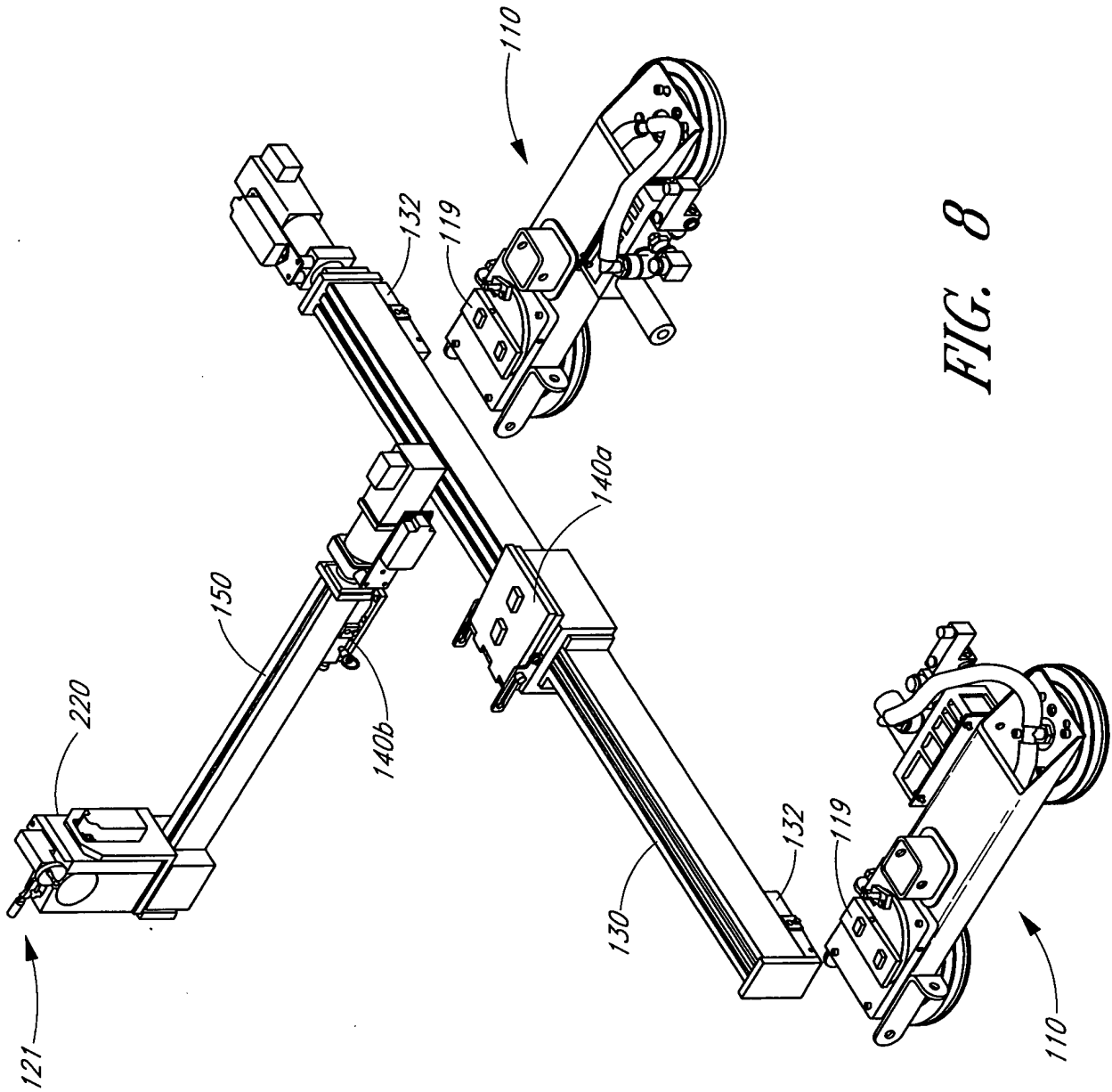


FIG. 8

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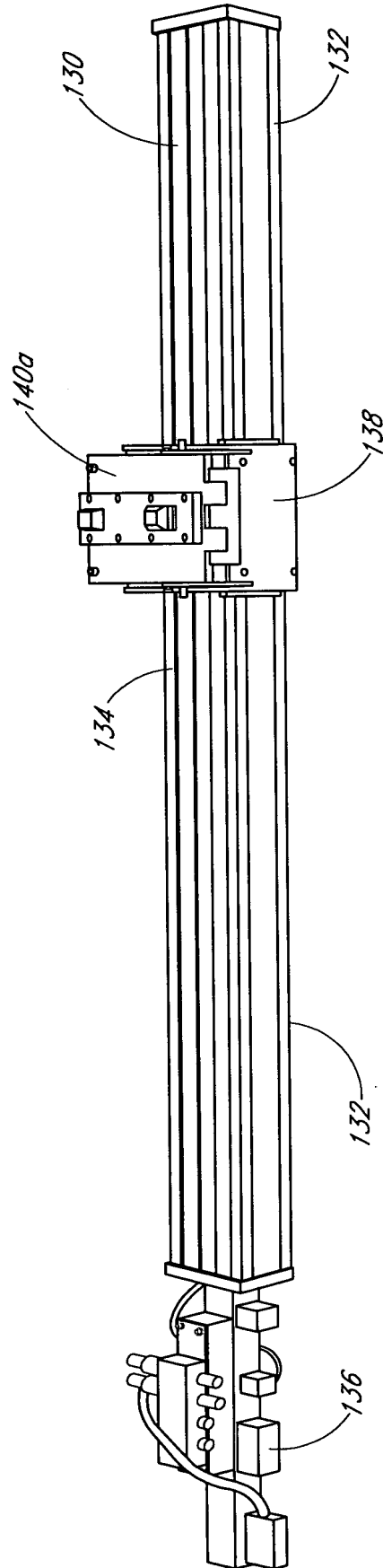


FIG. 9

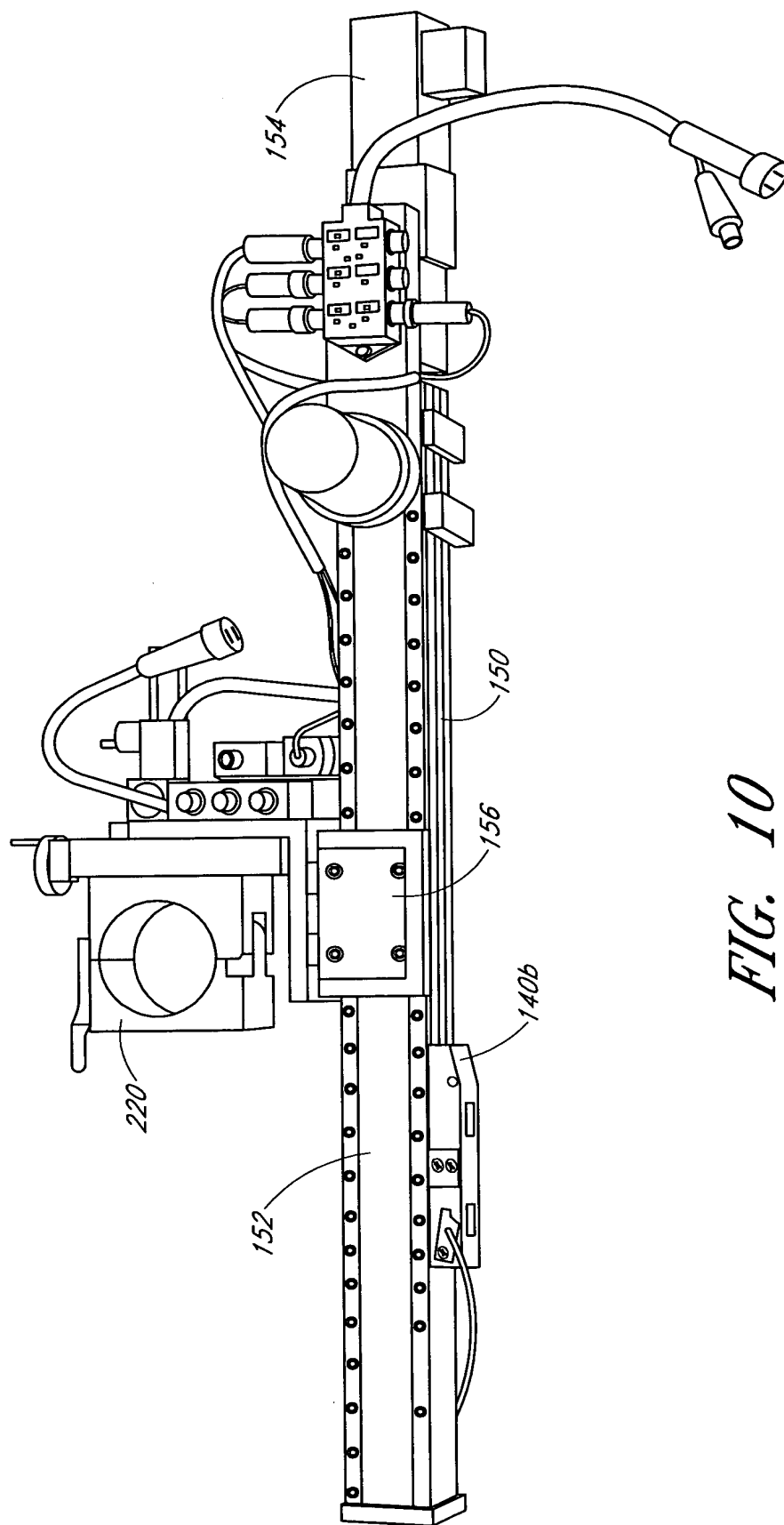


FIG. 10

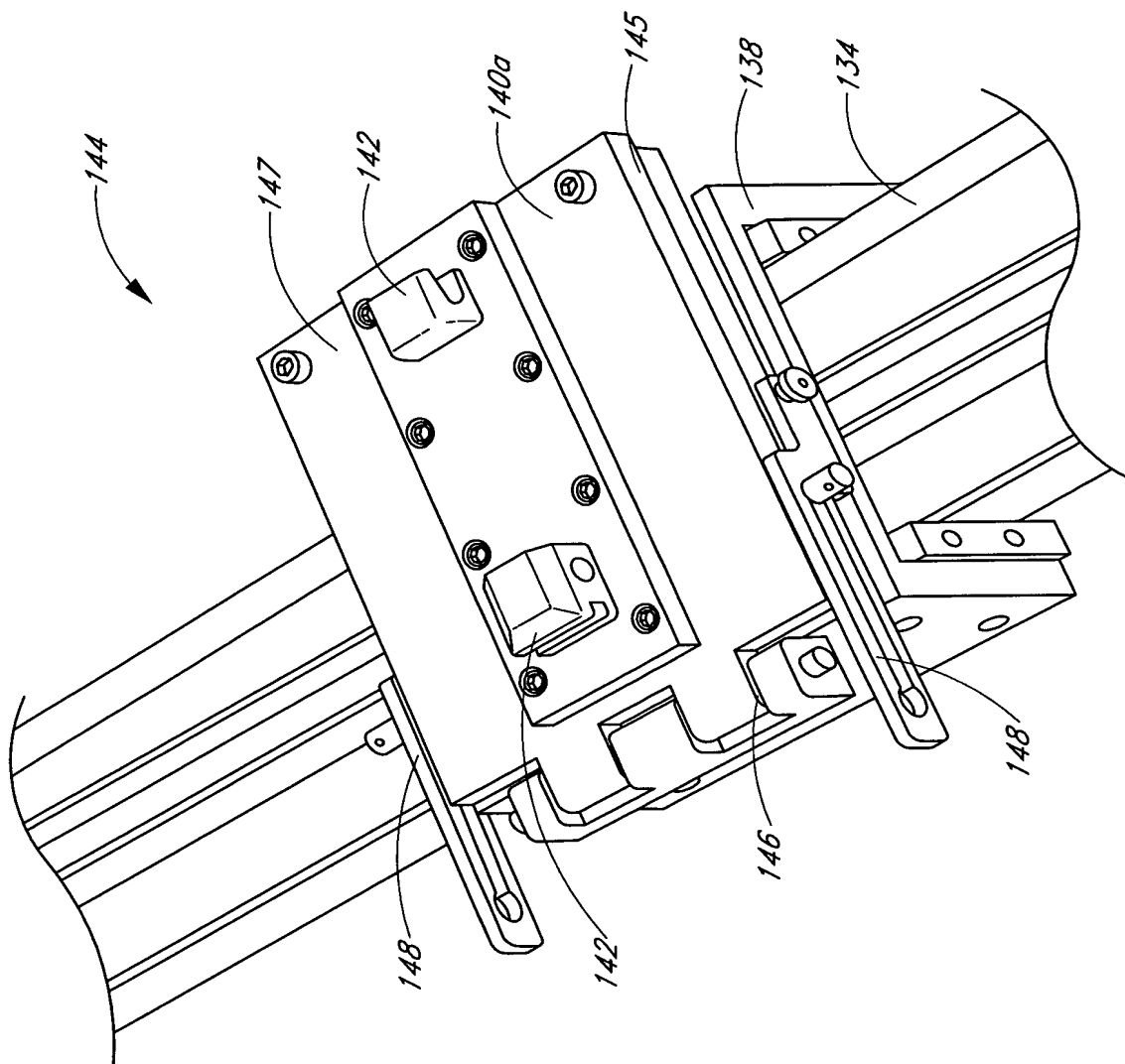


FIG. 11A

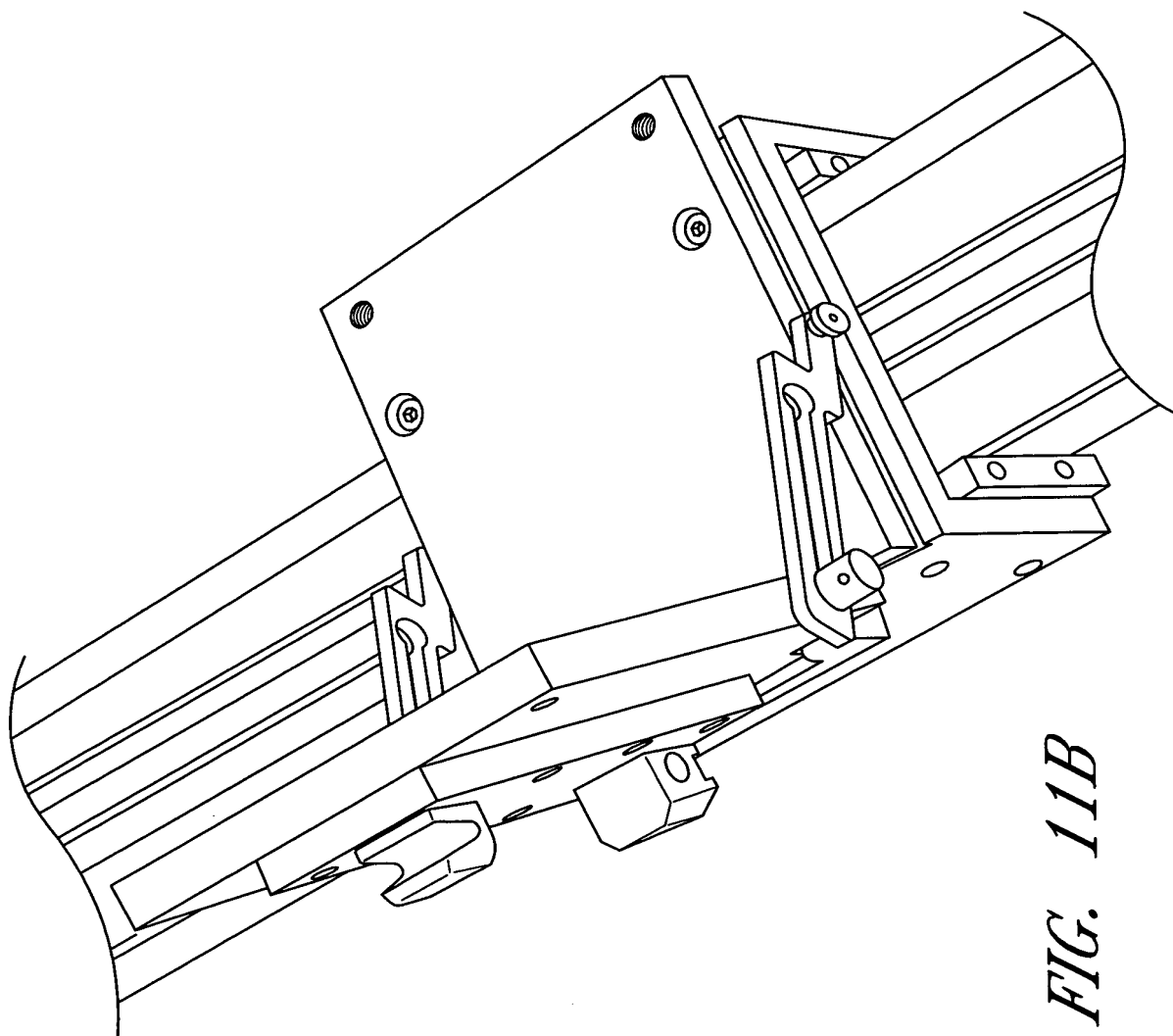


FIG. 11B

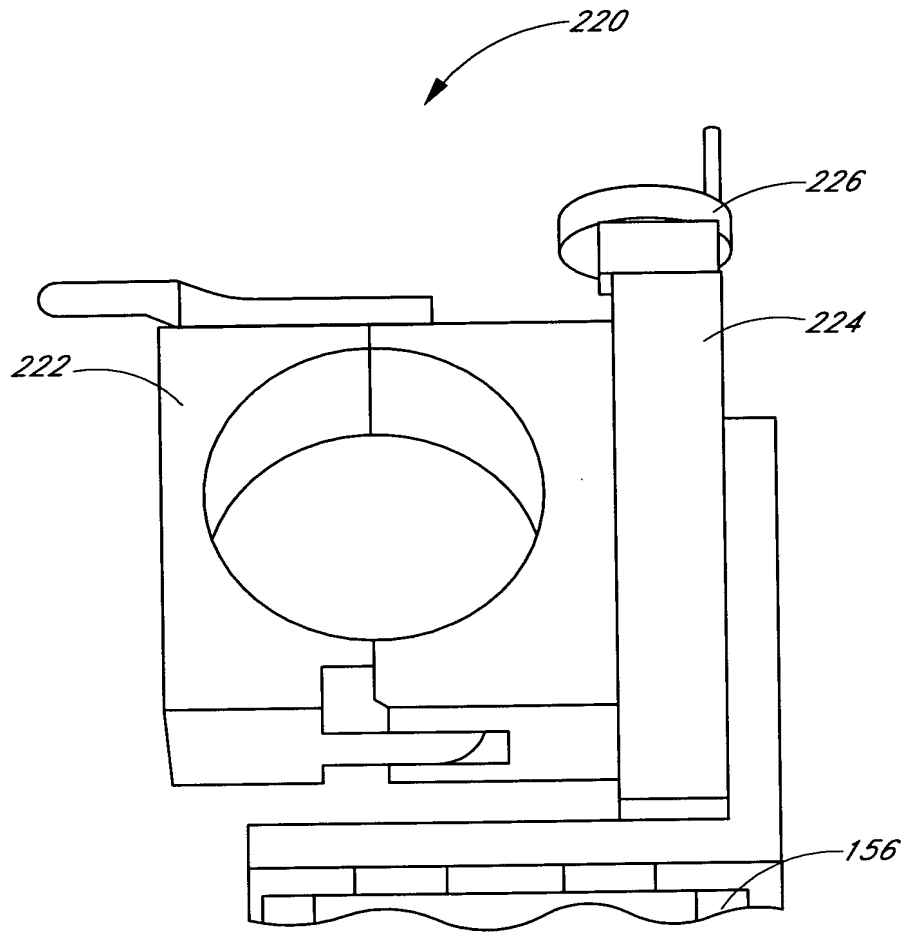


FIG. 12

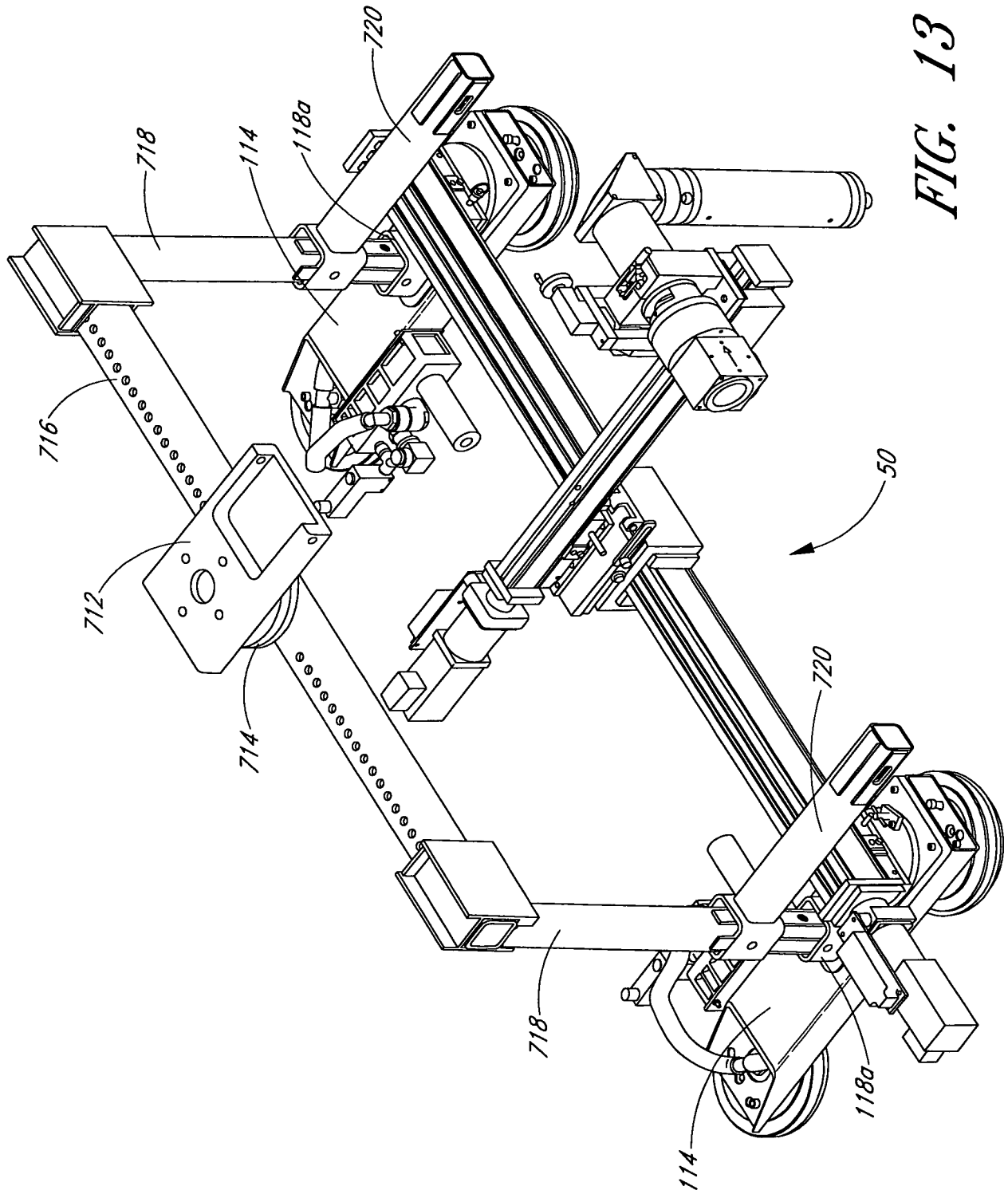


FIG. 13

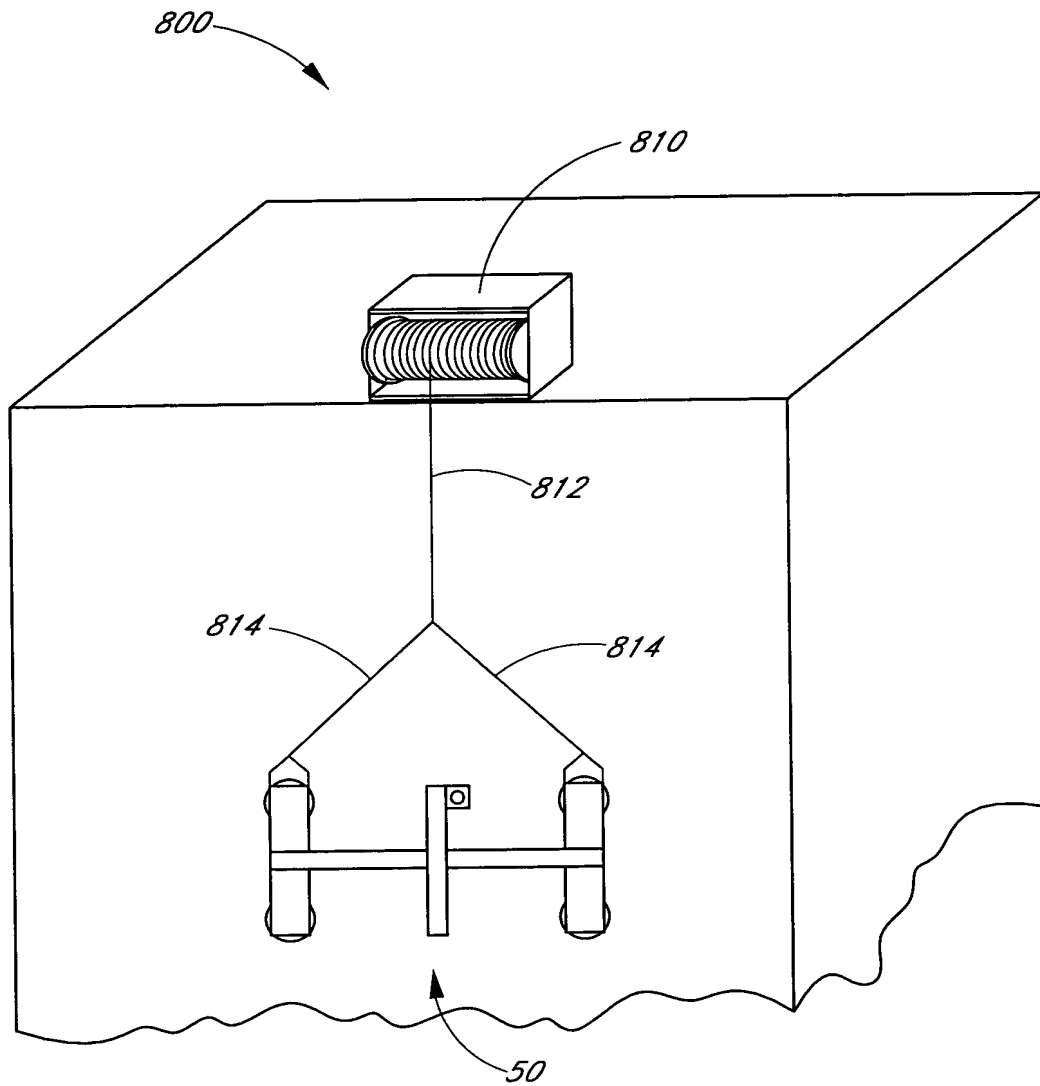


FIG. 14A

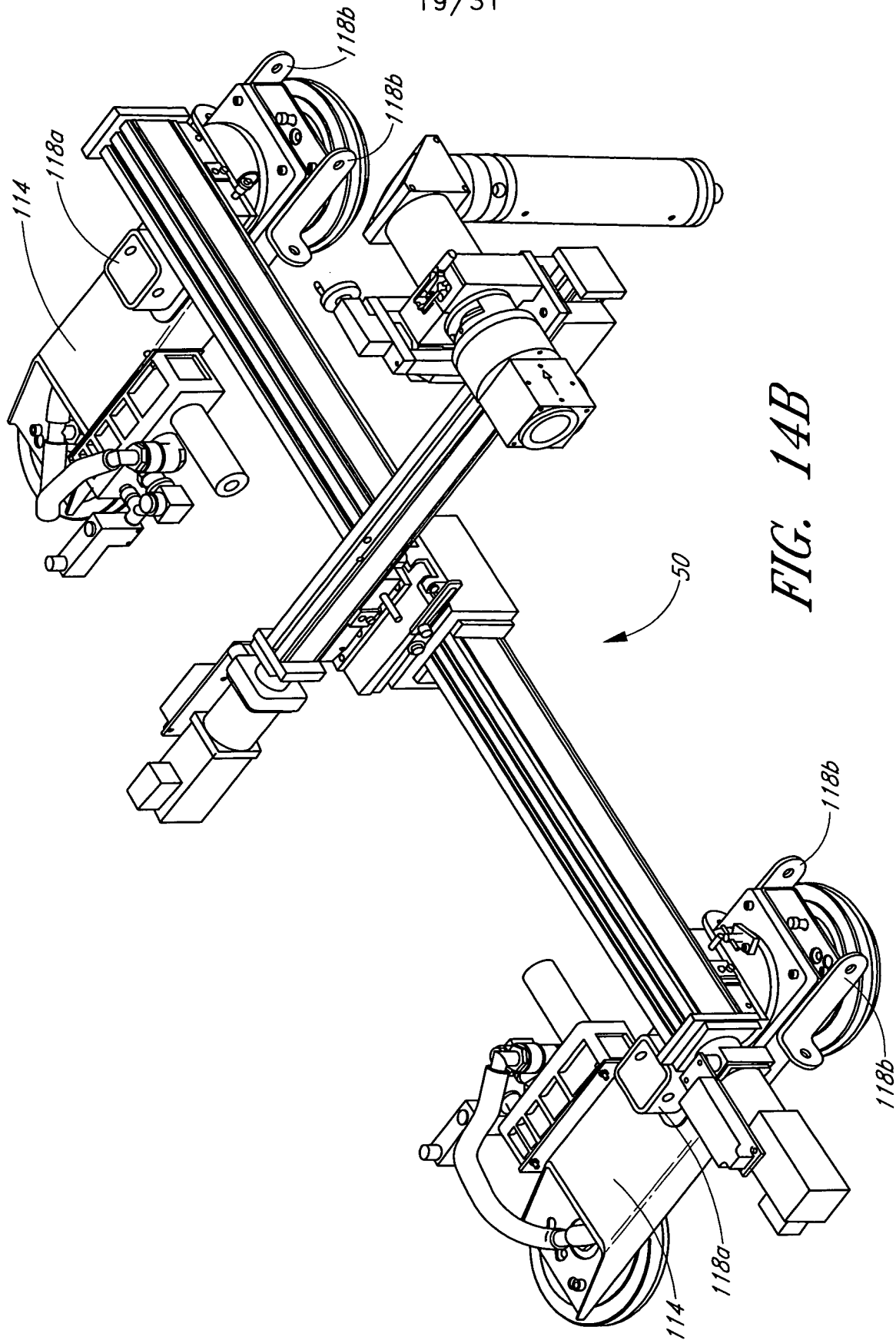


FIG. 14B

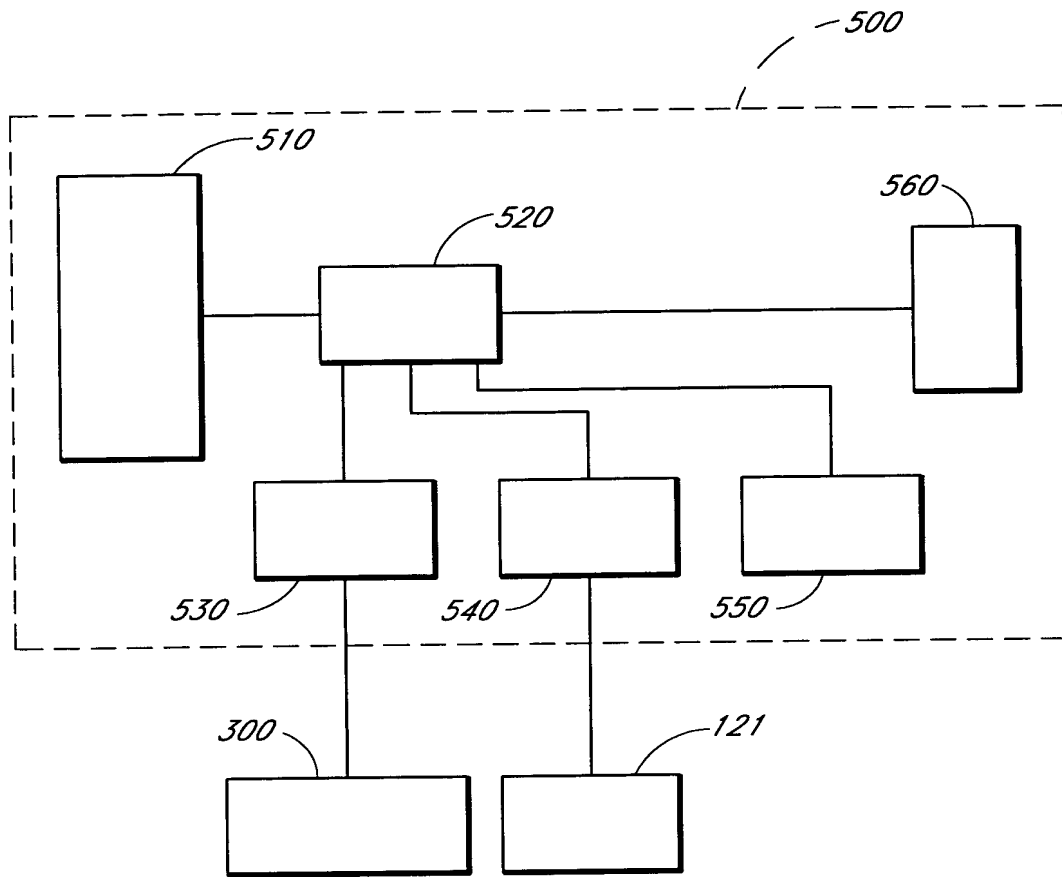


FIG. 15

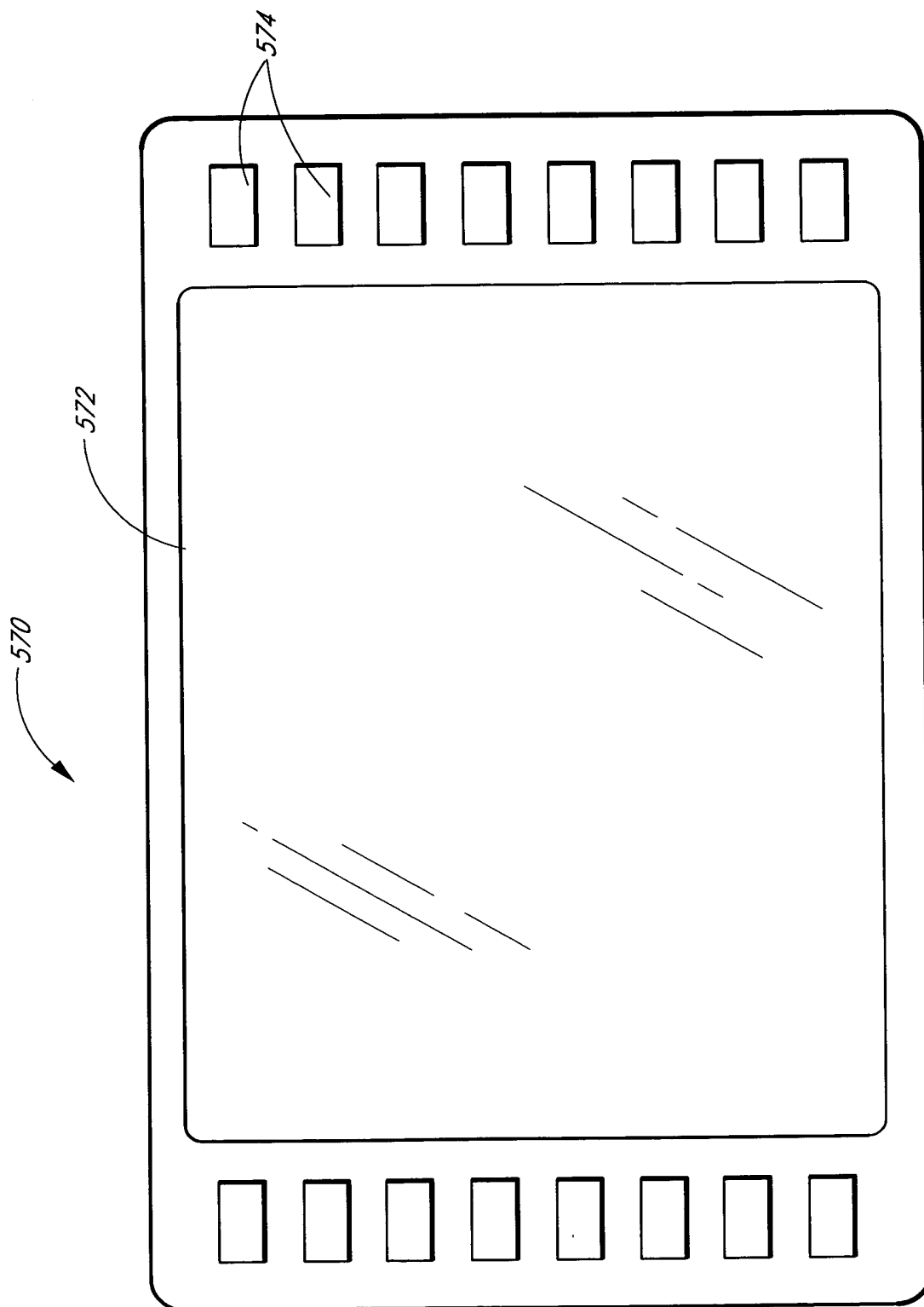


FIG. 16

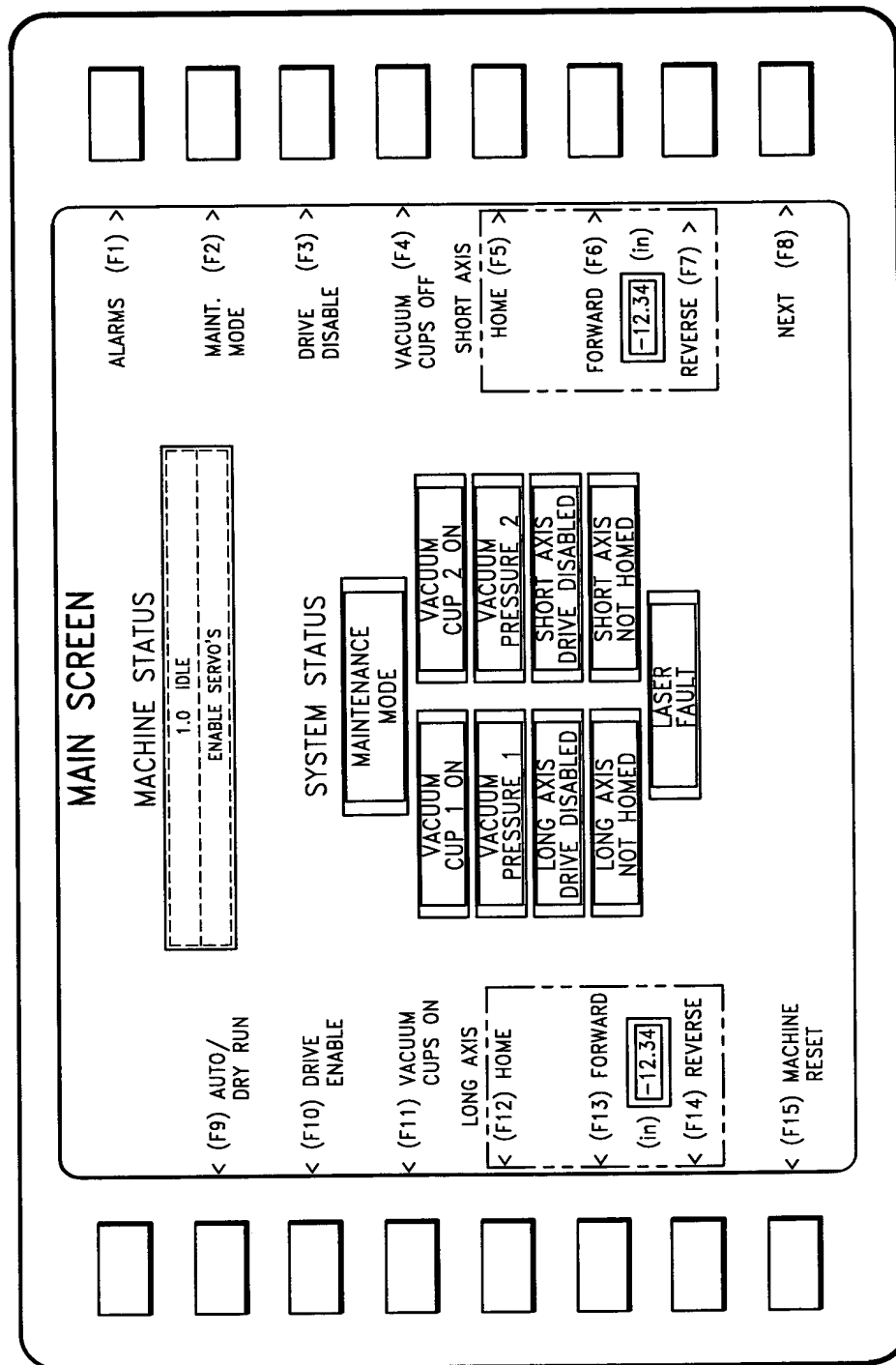


FIG. 17A

SELECT OPERATION SCREEN

< (F9) AUTO/
DRY RUN

MACHINE STATUS

1.0 IDLE
ENABLE SERVO'S

< (F11) CIRCLE

LONG AXIS
POSITION

-12.34 (in)

< (F12) PIERCE

SYSTEM STATUS

MAINTENANCE
MODE

< (F13) STRAIGHT CUT

SHORT AXIS
POSITION

-12.34 (in)

< (F14) SURFACE
KEYING

CIRCLE
IDLE

< (F15) MACHINE
RESET

PIERCE
IDLE

STRAIGHT CUT
IDLE

SURFACE KEYING
IDLE

NEXT (F8) >

FIG. 17B

CIRCLE SETUP/OPERATION SCREEN

MACHINE STATUS

1.0 IDLE
 ENABLE SERVO'S

CIRCLE STATUS

2.0 CIRCLE SEQUENCE IDLE
 PRESS CYCLE START TO BEGIN

SYSTEM STATUS

MAINTENANCE MODE

CIRCLE PARAMETERS

LONG AXIS POSITION

-12.34 (in)

SHORT AXIS POSITION

-12.34 (in)

REVOLUTIONS

STATUS 1234

SET POINT 1234

COUNT 123

DIAMETER (in)

STATUS -1.234

SET POINT -1.234

TIME (sec)

STATUS 1234

SET POINT 1234

SPEED (in/min)

STATUS -12.34

SET POINT -12.34

PROGRAM NUMBER

STATUS 12

SET POINT 12

< (F9) AUTO/ DRY RUN

< (F11) CYCLE START

< (F15) MACHINE RESET

CYCLE (F4) STOP

NEXT (F8) >

FIG. 17C

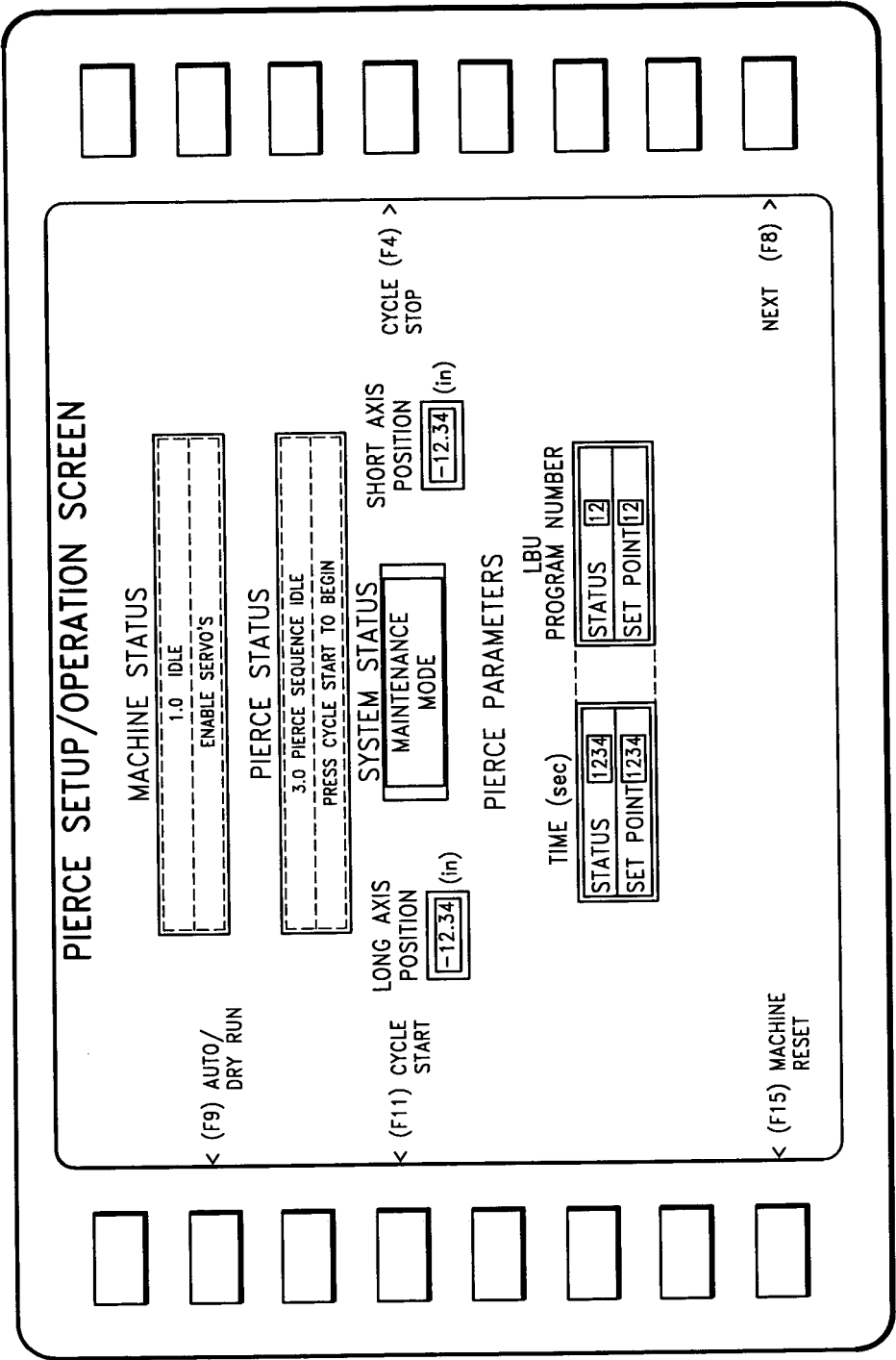


FIG. 17D

CUT SETUP/OPERATION SCREEN

MACHINE STATUS

1.0 IDLE
ENABLE SERVO'S

CUT STATUS

4.0 CUT SEQUENCE IDLE
PRESS CYCLE START TO BEGIN

SYSTEM STATUS

MAINTENANCE MODE

CUT PARAMETERS

LONG AXIS POSITION [-12.34] (in)

SHORT AXIS POSITION [-12.34] (in)

SPEED (in/min) STATUS [-12.34] SET POINT [-12.34]

LENGTH (in) STATUS [-12.34] SET POINT [-12.34]

PROGRAM NUMBER STATUS 12 SET POINT 12

LONG AXIS NOT SELECTED

SHORT AXIS NOT SELECTED

< (F9) AUTO/ DRY RUN

< (F11) CYCLE START

< (F13) LONG AXIS

< (F14) SHORT AXIS

< (F15) MACHINE RESET

CYCLE (F4) STOP

NEXT (F8) >

FIG. 17E

SURFACE KEYING SETUP/OPERATION SCREEN

MACHINE STATUS

1.0 IDLE
ENABLE SERVO'S

SURFACE KEYING STATUS

5.0 KEYING SEQUENCE IDLE
PRESS CYCLE START TO BEGIN

SYSTEM STATUS

MAINTENANCE
MODE

LONG AXIS POSITION
[-12.34] (in)

SHORT AXIS POSITION
[-12.34] (in)

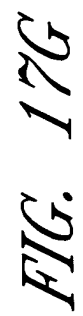
SURFACE KEYING PARAMETERS

PROGRAM NUMBER	SHORT AXIS LENGTH (in)	LONG AXIS LENGTH (in)	OFFSET (in)
STATUS [-12.34]	STATUS [-12.34]	STATUS [-12.34]	STATUS [-12.34]
SET POINT [12]	SET POINT [-12.34]	SET POINT [-12.34]	SET POINT [-12.34]
SPEED (in/min)		SPEED (in/min)	
STATUS [-12.34]		STATUS [-12.34]	
SET POINT [12]		SET POINT [-12.34]	

< (F9) AUTO/ DRY RUN < (F11) CYCLE START < (F15) MACHINE RESET

CYCLE (F4) STOP NEXT (F8) >

FIG. 17F



MAINTENANCE SCREEN

WARNING:
OPERATION FROM THIS SCREEN
BYPASSES SYSTEM INTERLOCKS

SYSTEM STATUS

MAINTENANCE MODE

VACUUM CUP 1 ON

VACUUM PRESSURE 1

LONG AXIS DRIVE DISABLED

LASER AIR SOLENOID OFF

LONG AXIS NOT HOMED

VACUUM CUP 2 ON

VACUUM PRESSURE 2

SHORT AXIS DRIVE DISABLED

LASER AIR PRESSURE

SHORT AXIS NOT HOMED

LASER FAULT

JOG SPEED (in/min)

STATUS -12.34

SET POINT -12.34

ALARMS (F1) >

LASER AIR ON/OFF (F2) >

DRIVE DISABLE (F3) >

VACUUM CUPS OFF (F4) >

SHORT AXIS HOME (F5) >

FORWARD (F6) >

REVERSE (F7) >

NEXT (F8) >

< (F9) AUTO/ DRY RUN

< (F10) DRIVE ENABLE

< (F11) VACUUM CUPS ON

LONG AXIS < (F12) HOME

< (F13) FORWARD

< (F14) REVERSE

< (F15) MACHINE RESET

-12.34

(in)

FIG. 17H

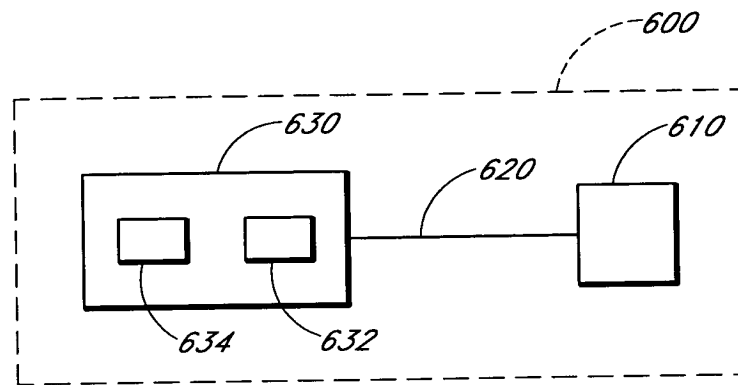


FIG. 18

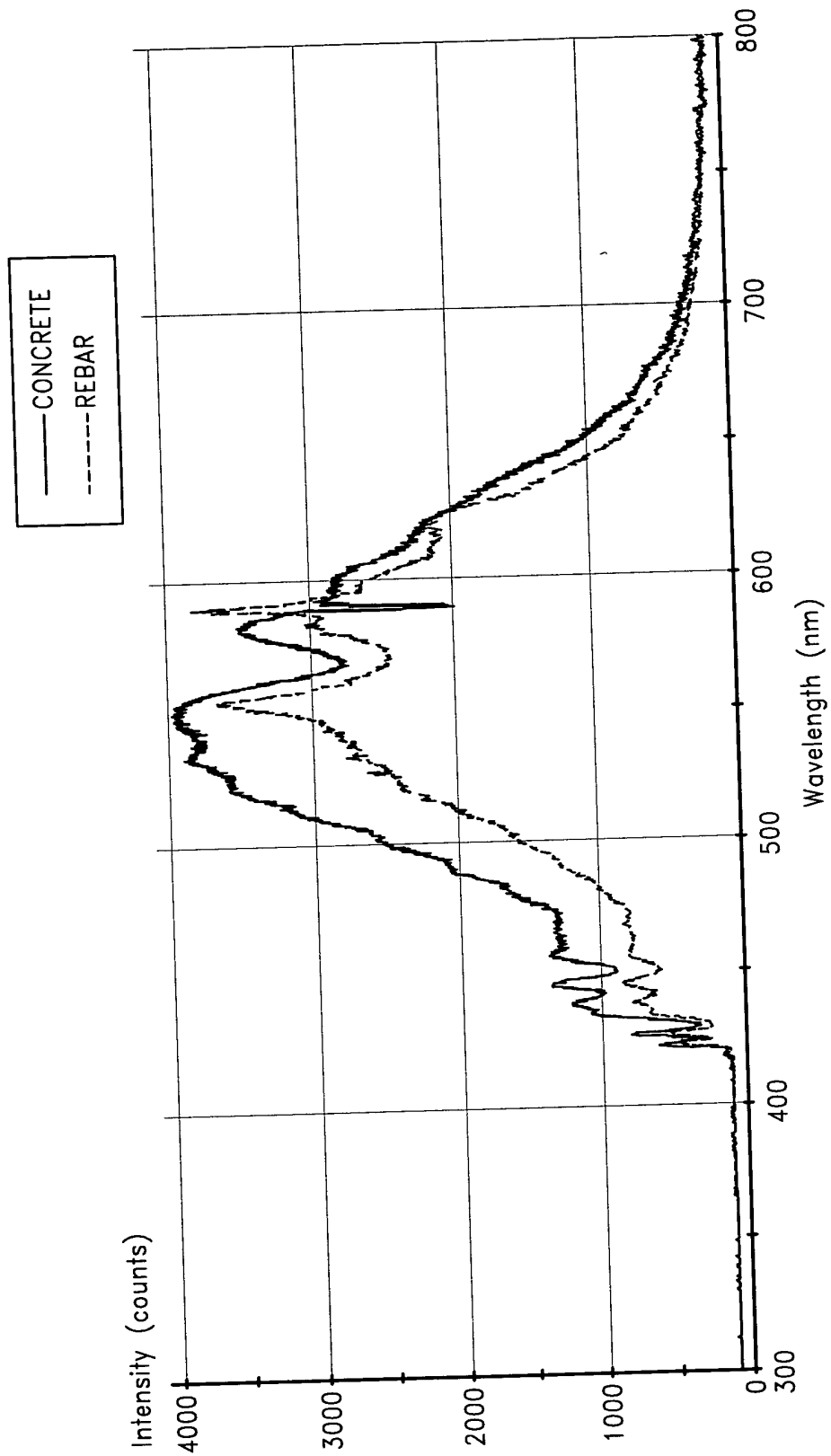


FIG. 19